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DIEL PATTERN OF FEEDING AND OVIPOSITION BY *CYRTOBAGOUS SALVINIAE* CALDER AND SANDS (COLEOPTERA: CURCULIONIDAE)

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Abstract

The diel pattern of oviposition and feeding by the salvinia weevil, *Cyrtobagous salviniae* Calder and Sands is described. The weevil deposited 76.5% of its eggs and produced 72.3% of feeding scars at night when maintained at ambient conditions of light and temperature. Weevils held at constant 25°C with a 12:12 hour photoperiod deposited 80.7% of eggs during hours of darkness.

The salvinia weevil, *Cyrtobagous salviniae* Calder and Sands was introduced into Australia for biological control of the water fern, *Salvinia molesta* Mitchell (Room *et al.* 1981). In laboratory studies feeding by adult weevils increased with an increase in temperature (Forno *et al.* 1983), while an increase in nitrogen concentration in the plant increased the rate of oviposition (Sands *et al.* 1986) but not of feeding (Forno and Bourne 1985).

Little is known of the diel pattern of behaviour of these weevils but they are frequently observed on the upper surface of the host plant by day and are occasionally attracted to lights at night (Room *et al.* 1981). We investigated feeding and oviposition by *C. salviniae* as part of a comprehensive study on the biology of the weevil.

In an experiment at ambient temperatures, weevils were collected from the field and allowed to acclimatise for 7 days on *S. molesta*, containing *ca* 2% nitrogen dry weight, in a fibreglass trough outdoors. After acclimatisation seven pairs of weevils were each placed in 500 ml plastic food containers with base and top replaced by gauze. Tertiary-stage (with upright leaves) plants of *S. molesta* were provided as food. Containers with weevils and plants were suspended by a polystyrene foam frame in a fibreglass trough containing a nutrient solution. Plants were replaced daily at 0600 hours and 1800 hours for 7 days (sunrise *ca* 0530 hours, sunset *ca* 1840 hours) and examined for eggs and feeding scars, using the methods of Forno *et al.* (1983).

In an experiment at constant 25°C, weevils from a laboratory colony were conditioned for 10 days in an environmental cabinet with a 12:12 hour photoperiod on *S. molesta* with the same nutrient. Pairs of weevils were then placed in plastic containers with plants and nutrient. Eggs and feeding scars were counted twice daily after each 12 hour photoperiod.

At 25°C, more eggs (80.7%, S.E. 3.6) were deposited during hours of darkness. Similarly, at ambient temperatures of the salvinia plants (23.0 - 27.5°C), more eggs (76.5%, S.E. 5.6) were deposited and more feeding scars produced (72.3%, S.E. 2.2) at night over 7 days.

Feeding and oviposition would therefore appear to be mainly nocturnal activities of the adult weevils (Fig. 1), despite the lower water temperatures at night.

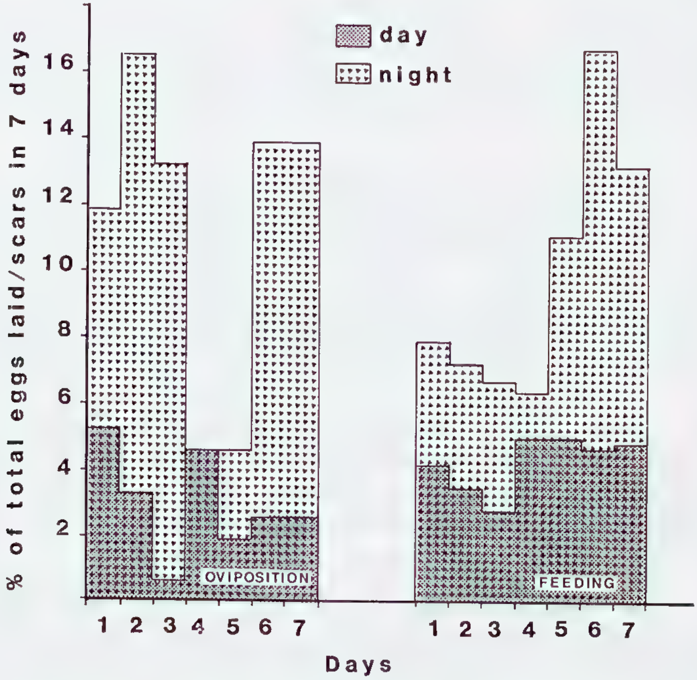

Fig. 1 - Diel oviposition and feeding of *Cyrtobagous salviniae* over 7 days at ambient temperatures (means from 7 pairs).

References

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